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(71) 出願人

000001052

株式会社クボタ

大阪府大阪市浪速区敷津東一丁目2番47号

(72) 発明者

佐治 照久

大阪府枚方市中宮大池1丁目1番1号 株式会社クボタ枚方製造所内

(74) 代理人

100068087

弁理士 森本 義弘

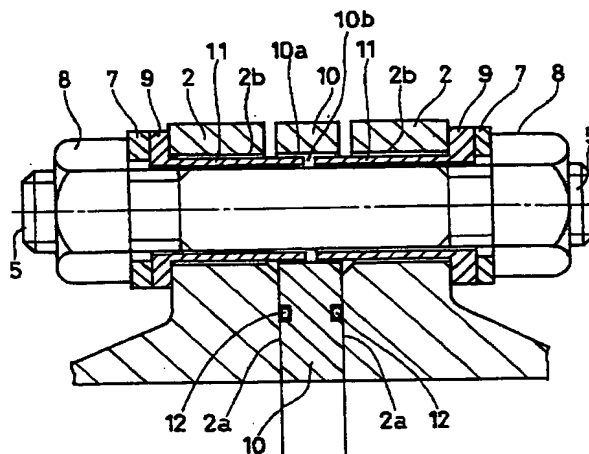
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(54) 【発明の名称】 管継手部の絶縁構造

(57) 【要約】

【課題】 フランジ継手の管継手部の絶縁を確実に実行ない、しかも部品管理も容易とすることを課題とする。

【解決手段】 フランジ継手1のフランジ2間に絶縁スペーサ10が介挿され、対向するフランジ周縁のボルト孔2bにそれぞれ対向外面から前記フランジ2、2間に達する鋲付き絶縁スリーブ11が挿入され、該対向するスリーブ11内を貫通して前記フランジ2、2間を締結するボルト5が締結されてなる。



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【特許請求の範囲】

【請求項1】 フランジ継手のフランジ間に絶縁スペーサが介挿され、対向するフランジ周縁のボルト孔にそれぞれ対向外面から前記フランジ間に達する鍔付き絶縁スリーブが挿入され、該対向するスリーブ内を貫通して前記フランジ間を締結するボルトが締結されてなる管継手部の絶縁構造。

【請求項2】 絶縁スペーサ、及び絶縁スリーブが弾性のある合成樹脂製品である請求項1の管継手部の絶縁構造。

【発明の詳細な説明】

【0001】

【発明の属する技術分野】この発明は、管継手部の絶縁構造に関する。

【0002】

【従来の技術】従来、管路を電氣的に遮断し区分する場合、図4に示すようにフランジ継手1、1のフランジ2の対向接触面2a、2a間に硬質ゴムあるいはプラスチック製の絶縁パッキン3を介挿し、フランジ2の周辺ボルト孔2b、2bに絶縁ライニング4を施したボルト5を挿通し、絶縁ワッシャー6、金属ワッシャー7を介してナット8を締結する構造の絶縁構造が一般に使用されていた。

【0003】

【発明が解決しようとする課題】ところで、上記従来の絶縁構造は、ボルト5外面に施される絶縁ライニング4の寸法を、フランジ2に対する絶縁面を確保しながらナット8に対するねじ代部分5aを設けなければならないので、フランジ2の規格に応じてそれぞれ適合する寸法の絶縁ライニング4を施したボルト5を用意する必要があるが、部品管理が面倒となる欠点があった。

【0004】また、ボルト5にナット8をねじ嵌合するときは、必ず絶縁ワッシャー6を組み込まなくてはならないが、フランジ接合の際締結するボルト5は最低でも4本通常では12本、大径管の場合はさらに多い本数のボルトを締結する上、絶縁ワッシャーはボルトやナットに比べて小型部品あるから、絶縁ワッシャー6の組み込み忘れが起きる危険があり、しかも、一個所でもこのような組み込み忘れがあると絶縁効果が消失する場合がある問題があった。

【0005】また、絶縁ワッシャー6は金属製ワッシャー7に隠されるので事後確認が困難となり組み立て直後のチェックミスも生じる可能性がある問題があった。この発明は上記問題を解消し、フランジ継手の管継手部の絶縁が確実に行なえ、しかも部品管理も容易な管継手部の絶縁構造を提供することを目的としてなされたものである。

【0006】

【課題を解決するための手段】この発明の管継手部の絶縁構造は、フランジ継手のフランジ間に絶縁スペーサが

介挿され、対向するフランジ周縁のボルト孔にそれぞれ対向外面から前記フランジ間に達する鍔付き絶縁スリーブが挿入され、該対向するスリーブ内を貫通して前記フランジ間を締結するボルトが締結されてなるものである。

【0007】上記管継手部の絶縁構造によれば、フランジ間に締結されるボルトは絶縁スリーブによってフランジと絶縁されるので、任意のボルトが使用でき、従来のようにフランジ継手の規格に合わせて絶縁ボルトを用意する必要がなく、部品管理が容易となる。さらに、ボルト孔に挿入される絶縁スリーブには、絶縁ワッシャーを兼ねる鍔がついているので、絶縁ワッシャーの組み込み忘れといった事故も防げる。

【0008】請求項2の管継手部の絶縁構造は、上記管継手部の絶縁構造において、絶縁スペーサ、及び絶縁スリーブが弾性のある合成樹脂製品とされたものである。この管継手部の絶縁構造によれば、絶縁スペーサ自体もシールパッキンとして機能するので電気絶縁とシールとの両方を兼ねさせることができる。

【0009】

【発明の実施の形態】次に、この発明の実施の形態を説明する。図1は、この発明の実施の形態の管継手部の絶縁構造の要部断面図である。なお、従来と同じ構造の部分は従来と同じ符号を図中に付し詳細な説明は省略する。

【0010】図1において、10は絶縁スペーサを示し、フランジ継手1、1のフランジ2、2間に介挿される。この絶縁スペーサ10は電氣的導通のない材質、例えば硬質ゴム、プラスチックなどから形成され、図示例の場合は、フランジ2の外径に至る径を有した形状とされ、その周縁フランジ2、2に形成されたボルト貫通孔2bに対応する位置にボルト貫通孔10aが穿設されている。

【0011】フランジ2、2のボルト孔2b、2bには鍔9付きの絶縁スリーブ11が挿入されている。この絶縁スリーブ11は、上記絶縁スペーサと同様な材質とされ、スリーブ11の長さは図示のように絶縁スペーサ10の貫通孔10a内で隙間10bを有する長さとしてされる。

【0012】また、図中12はOリングを示しフランジ対向接触面2a、2a間のシールを行なう。以上説明したように、この実施の形態における管継手部の絶縁構造は、フランジ対向接触面2a間は絶縁スペーサ10により、また締結ボルト5の貫通部は鍔付きの絶縁スリーブ11により絶縁されるので、継手間の電氣的絶縁が確実に行なわれる。

【0013】そして、ボルト5締結部の絶縁は鍔9付きの絶縁スリーブ11で行なうので、絶縁スリーブ11の装着時に鍔9が従来の絶縁ワッシャーを兼ねることとなり、絶縁ワッシャーの取り付け忘れの事故を防止すること

ができる。また、絶縁スリーブ11内にボルト5が納まりかつフランジ2、2間を締結する長ささえあれば、どのようなボルトナットであっても使用可能であり、従来のように規格寸法に合った絶縁ボルトを使用する必要もなく、汎用的な使用ができる。

【0014】さらに、絶縁スリーブ11の端部は絶縁スペーサ10内に納まるので絶縁が確実となる。なお、上記実施の形態として、絶縁スリーブ11の端部を、絶縁スペーサ10のボルト貫通孔10a内に収める場合を示したが、図2に示すように、絶縁スペーサ10を従来と同様フランジ対向接触面2a部分のみとし、絶縁スリーブ11同士を互いにオーバーラップさせるようにして取り付けてもよい。

【0015】また、ボルト5を図3に示すように頭付きボルト5aとしても良い。なお、図2、図3において図1と同じ部材は同じ符号で示し、詳細な説明は省略する。また、上記実施の形態において、絶縁スペーサ10、絶縁スリーブ11の材質を合成ゴムやプラスチックの弾性のある材質のものにすることもできる。

【0016】この場合、絶縁スペーサ自体もシールパッキンとして機能するので電気絶縁とシールとの両方を兼ね備えさせる事ができる。

【0017】

【発明の効果】以上説明したように、この発明の管継手部の絶縁構造によれば、従来フランジ継手毎にセットとして必要とされていた絶縁ボルトを用意する必要がなく、部品管理が容易となり、しかも確実な電気的絶縁が可能となる。また、絶縁部材を弾性材料で形成した場合、電気的絶縁とシールとを同時にかつ高性能で達成できるので、信頼性の高い継手とすることができる。

【図面の簡単な説明】

【図1】本発明の実施の形態の管継手部の絶縁構造の要部断面図である。

【図2】他の構成例の要部断面図である。

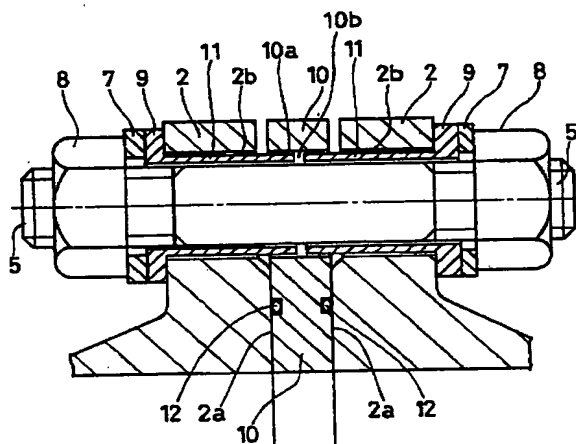
【図3】さらに他の構成例の要部断面図である。

【図4】従来例の管継手部の要部断面図である。

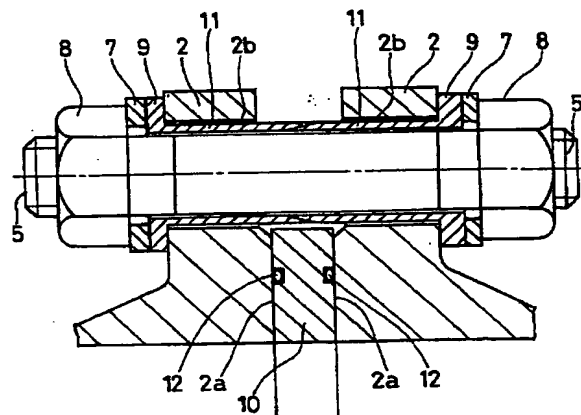
【符号の説明】

- 1 フランジ継手
- 2 フランジ
- 2b ボルト貫通孔
- 5 締結ボルト
- 9 罎
- 10 絶縁スペーサ
- 10a ボルト貫通孔
- 11 絶縁スリーブ
- 12 Oリング

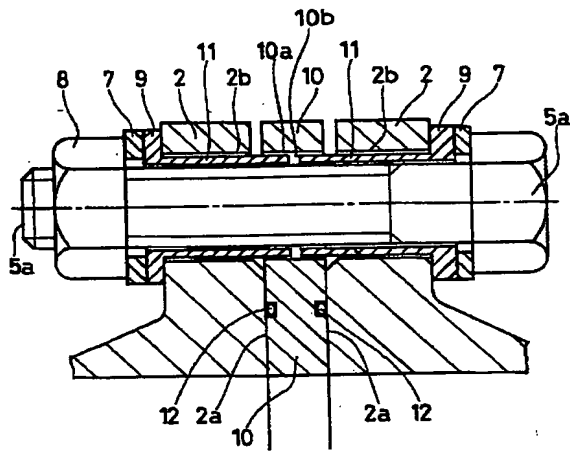
【図1】



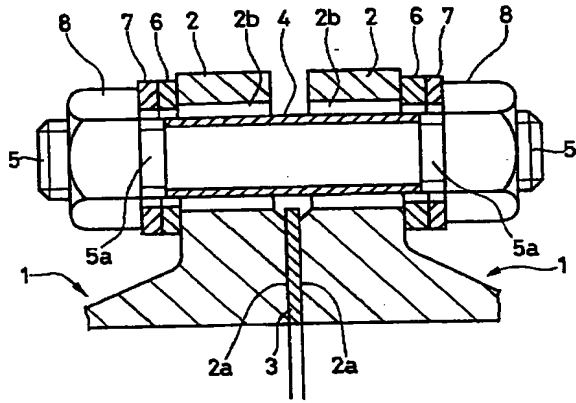
【図2】



【図3】



【図4】



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Bibliography

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- (51) [The 7th edition of International Patent Classification]

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(71) [Applicant]

[Identification Number] 000001052

[Name] KUBOTA CORP.

[Address] 1-2-47, Shikitsu-higashi, Naniwa-ku, Osaka-shi, Osaka

(72) [Inventor(s)]

[Name] Sazi Teruhisa

[Address] 1-1-1, Nakamiya Oike, Hirakata-shi, Osaka The KUBOTA CORP. Hirakata manufacture within a station

(74) [Attorney]

[Identification Number] 100068087

[Patent Attorney]

[Name] Morimoto Yoshihiro

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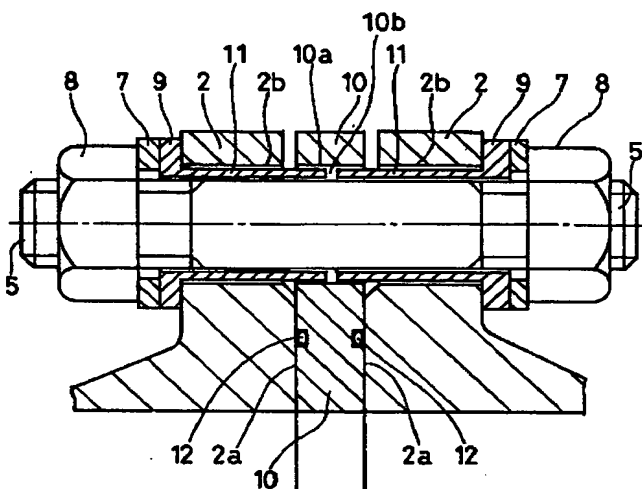
Epitome

(57) [Abstract]

[Technical problem] The insulation of the pipe joint section of a flange coupling is ensured, and let it be a technical problem to also make parts control easy moreover.

[Means for Solution] the collar which reaches bolthole 2b of the flange periphery which the insulating spacer 10 is inserted between the flanges 2 of a flange coupling 1, and counters between said flange 2 and 2 from opposite external surface, respectively — it comes to conclude the bolt 5 with which the with insulating sleeve 11 is inserted, penetrates the inside of the sleeve 11 which this counters, and concludes between said flange 2 and 2

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CLAIMS

[Claim(s)]

[Claim 1] the collar which reaches the bolthole of the flange periphery which an insulating spacer is inserted between the flanges of a flange coupling, and counters between said flanges from opposite external surface, respectively — the discontinuous construction of the pipe joint section with which it comes to conclude the

bolt with which a with insulating sleeve is inserted, penetrates the inside of the sleeve which this counters, and concludes between said flanges.

[Claim 2] An insulating spacer and discontinuous construction of the pipe joint section of claim 1 whose insulating sleeve is a synthetic-resin product with elasticity.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the discontinuous construction of the pipe joint section.

[0002]

[Description of the Prior Art] When a duct was intercepted electrically and classified conventionally, as shown in drawing 4, hard rubber or the insulating packing 3 made from plastics was inserted between opposite contact surface 2a of the flange 2 of flange couplings 1 and 1, and 2a, the bolt 5 which gave insulating lining 4 to circumference bolthole 2b of a flange 2 and 2b was inserted in, and, generally the discontinuous construction of the structure which concludes a nut 8 through the insulating washer 6 and the metal washer 7 was used.

[0003]

[Problem(s) to be Solved by the Invention] By the way, since the above-mentioned conventional discontinuous construction had to prepare *** cost partial 5a to a nut 8, securing an insulating side [as opposed to a flange 2 for the dimension of the insulating lining 4 given to bolt 5 external surface], it needed to prepare the bolt 5 which gave insulating lining 4 of the dimension which suits according to the specification of a flange 2, respectively, and had the fault from which parts control becomes troublesome.

[0004] Moreover, when ***ing a nut 8 in a bolt 5 and fitting into it Although the insulating washer 6 must be incorporated, also at the lowest by 4 usual, the bolt 5 concluded in the case of flange junction 12 An insulating washer when concluding the bolt of still more numbers in the case of major-diameter tubing is compared with a bolt or a nut. From small components *** There was risk of a failure of the insulating washer 6 incorporating occurring, and moreover, when it such failed to incorporate even in the piece place, there was a problem on which the insulating effectiveness may disappear.

[0005] Moreover, since the insulating washer 6 was hidden in the metal washer 7, it had the problem which a follow up may become difficult, may assemble and may also produce the next check mistake. This invention solves the above-mentioned problem, and can ensure the insulation of the pipe joint section of a flange coupling, and it is made for the purpose of moreover parts control offering the discontinuous construction of the easy pipe joint section.

[0006]

[Means for Solving the Problem] the collar with which the discontinuous construction of the pipe joint section of this invention reaches between said flanges from opposite external surface between the flanges of a flange coupling at the bolthole of the flange periphery where an insulating spacer is inserted and counters, respectively -- it comes to conclude the bolt with which a with insulating sleeve is inserted, penetrates the inside of the sleeve which this counters, and concludes between said flanges.

[0007] Since the bolt concluded between flanges is insulated with a flange by the insulating sleeve according to the discontinuous construction of the above-mentioned pipe joint section, the bolt of arbitration can be used, it is not necessary to prepare an insulating bolt according to the specification of a flange coupling like before, and parts control becomes easy. Furthermore, since the collar which serves as an insulating washer is

attached to the insulating sleeve inserted in a bolthole, the accident of a failure of an insulating washer to incorporate can also be prevented.

[0008] Let discontinuous construction of the pipe joint section of claim 2 be an insulating spacer and the synthetic-resin product with which an insulating sleeve has elasticity in the discontinuous construction of the above-mentioned pipe joint section. Since the insulating spacer itself functions as seal packing, it can be made to serve both as both electric insulation and a seal according to the discontinuous construction of this pipe joint section.

[0009]

[Embodiment of the Invention] Next, the gestalt of implementation of this invention is explained. Drawing 1 is the important section sectional view of the discontinuous construction of the pipe joint section of the gestalt of implementation of this invention. In addition, the part of the same structure as the former attaches the same sign as the former all over drawing, and detailed explanation is omitted.

[0010] In drawing 1, 10 shows an insulating spacer and is inserted between the flange 2 of flange couplings 1 and 1, and 2. This insulating spacer 10 is formed from the quality of the material without an electric flow, for example, hard rubber, plastics, etc., in the case of the example of illustration, it is made into a configuration with the path which results in the outer diameter of a flange 2, and bolt through tube 10a is drilled in the location corresponding to bolt through tube 2b formed in those periphery flanges 2 and 2.

[0011] The insulating sleeve 11 with a collar 9 is inserted in bolthole 2b of flanges 2 and 2, and 2b. This insulating sleeve 11 is made into the same quality of the material as the above-mentioned insulating spacer, and let the die length of a sleeve 11 be the die length which has clearance 10b within through tube 10a of the insulating spacer 10 like illustration.

[0012] Moreover, 12 in drawing shows an O ring and performs the seal between flange opposite contact surface 2a and 2a. As explained above, since the discontinuous construction of the pipe joint section in the gestalt of this operation is insulated with the insulating spacer 10 between flange opposite contact surface 2a by the insulating sleeve 11 with a collar in the penetration section of the conclusion bolt 5 again, the electric insulation between joints is ensured.

[0013] And since the insulation of the bolt 5 conclusion section is performed by the insulating sleeve 11 with a collar 9, a collar 9 will serve as the conventional insulating washer at the time of wearing of an insulating sleeve 11, and can prevent the accident of a failure of an insulating washer to attach at it. Moreover, if there is even die length which a bolt 5 is settled in an insulating sleeve 11, and concludes between a flange 2 and 2, no matter it may be what bolt nut, it will be usable, it is not necessary to use the insulating bolt which suited the standard size like before, and general-purpose use can be performed.

[0014] Furthermore, since the edge of an insulating sleeve 11 is settled in the insulating spacer 10, it becomes certain insulating it. In addition, although the case where the edge of an insulating sleeve 11 was stored in bolt through tube 10a of the insulating spacer 10 was shown as a gestalt of the above-mentioned implementation, as shown in drawing 2, the insulating spacer 10 is used only as a flange opposite contact surface 2a part as usual, and insulating-sleeve 11 comrades may be made to overlap mutually, and may be made and attached.

[0015] Moreover, in a bolt 5, as shown in drawing 3, it is good also as bolt 5 with the head a. In addition, in drawing 2 and drawing 3, the same sign shows the same member as drawing 1, and detailed explanation is omitted. Moreover, in the gestalt of the above-mentioned implementation, the quality of the material of the insulating spacer 10 and an insulating sleeve 11 can also be made into the thing of the quality of the material with the elasticity of synthetic rubber or plastics.

[0016] In this case, since the insulating spacer itself functions as seal packing, both electric insulation and a seal can be made to be combined.

[0017]

[Effect of the Invention] As explained above, according to the discontinuous construction of the pipe joint section of this invention, it is not necessary to prepare the insulating bolt conventionally needed as a set for every flange coupling, parts control becomes easy, and, moreover, a positive electric insulation is attained. Moreover, since it is highly efficient simultaneous and an electric insulation and a seal can be attained when an insulating member is formed with a spring material, it can consider as a reliable joint.

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is the important section sectional view of the discontinuous construction of the pipe joint section of the gestalt of operation of this invention.

[Drawing 2] It is the important section sectional view of other examples of a configuration.

[Drawing 3] It is the important section sectional view of the example of a configuration of further others.

[Drawing 4] It is the important section sectional view of the pipe joint section of the conventional example.

[Description of Notations]

1 Flange Coupling

2 Flange

2b Bolt through tube

5 Conclusion Bolt

9 Collar

10 Insulating Spacer

10a Bolt through tube

11 Insulating Sleeve

12 O Ring

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